Report on the national low back pain survey: 2023 update

Noriaki Kurita, Takuya Nikaido, Ryoji Tominaga, Yuji Endo, Kakuya Niihata, Yasuchika Aoki, Tetsuro Ohba, Atsushi Kimura, Hiromitsu Toyoda, Kazuyoshi Nakanishi, Takashi Hirai, Yu Yamato, Nobuyuki Fujita, Shinichi Konno, Seiji Ohtori

Nippon Research Center Ltd.
Tokyo Traffic Kinshicho Bldg. 4-26-5 Kotobashi, Sumida-ku, Tokyo, 130-0022, Japan
TEL. +81-3-6894-6400 FAX. +81-3-5638-9155
https://www.nrc.co.jp/english/index.html

Research Organization

This study was conducted at the initiative of the Clinical Research Committee of the Japanese Society of Lumbar Spine Disorders (former chair: Shinichi Konno, Professor Emeritus, Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine; current chair: Seiji Ohtori, Professor, Department of Orthopeaedic Surgery, Graduate School of Medicine, Chiba University)

Noriaki Kurita

Specially Appointed Professor, Department of Clinical Epidemiology, Graduate School of Medicine, Fukushima Medical University

Takuya Nikaido

Associate Professor, Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine

Ryoji Tominaga

Postdoctoral Fellow, Department of Clinical Epidemiology, Graduate School of Medicine, Fukushima Medical University

Yuji Endo

Staff Physician, Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine

Kakuya Niihata

Postdoctoral Fellow, Department of Clinical Epidemiology, Graduate School of Medicine, Fukushima Medical University, Fukushima, Japan

Yasuchika Aoki

Director, Department of Orthopaedic Surgery, Eastern Chiba Medical Center

Tetsuro Ohba

Senior Lecturer, Department of Orthopaedics, University of Yamanashi

Atsushi Kimura

Professor, Department of Orthopaedics, Jichi Medical University

Hiromitsu Toyoda

Associate Professor, Department of Orthopaedic Surgery, Osaka Metropolitan University, Graduate School of Medicine

Kazuyoshi Nakanishi

Professor and Chairman, Department of Orthopaedic Surgery, Nihon University School of Medicine

Takashi Hirai

Associate Professor, Department of Orthopedic Surgery, Tokyo Medical and Dental University

Yu Yamato

Associate Professor, Department of Orthopaedic Surgery, Hamamatsu University School of Medicine

Nobuyuki Fujita

Professor, Department of Orthopaedic Surgery, School of Medicine, Fujita Health University

Shinichi Konno

Professor Emeritus, Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine

Seiji Ohtori

Professor, Department of Orthopeaedic Surgery, Graduate School of Medicine, Chiba University

Please use the following format when citing this report:

Kurita Noriaki, Nikaido Takuya, Tominaga Ryoji, Endo Yuji, Niihata Kakuya, Aoki Yasuchika, Ohba Tetsuro, Kimura Atsushi, Toyoda Hiromitsu, Nakanishi Kazuyoshi, Hirai Takashi, Yamato Yu, Fujita Nobuyuki, Konno Shinichi and Ohtori Seiji. Report on the national low back pain survey: 2023 update. Japanese Society of Lumbar Spine Disorders, 2024.
URL https://www.jslsd.jp/contents/uploads/2024/08/lbp2023report_en.pdf, DOI: 10.70887/jslsd-002

Table of Contents

1. Introduction

Low back pain (LBP) is a musculoskeletal condition that occurs frequently in all countries, age groups, and people throughout their lifetimes, with acute episodes or chronic health conditions [1]. According to the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) in 2021, LBP ranks first in years lived with disability [2]. Therefore, clarifying the prevalence of LBP using a nationally representative sample of Japanese residents will play an important role in developing health policies at the national level.

According to the 2022 Japanese Comprehensive Survey of Living Conditions*1), the overall prevalence of LBP is 102.1 (per 1,000 people) [3], and LBP is the most common symptom in both men and women. This prevalence was higher than the 92.5 prevalence reported in a 1998 survey [4]. Although the GBD study also reported the prevalence of LBP, it could not be compared with the prevalence obtained from the Comprehensive Survey of Living Conditions. One reason for this is that, unlike the GBD study, the definition of LBP (such as pain location and duration) is unclear in the Comprehensive Survey of Living Conditions.

In 2003, a nationwide survey of LBP was conducted at the request of the Project Committee of the Japanese Orthopaedic Association [5]. Using a nationally representative sample and an explicit definition of LBP, the survey found that the overall prevalence of LBP is 30.6%. This study also revealed the effect of LBP on daily life and its association with exploratory factors. However, certain issues remain unresolved. First, because the survey only covered people aged ≤ 80 years, the actual prevalence of LBP was unclear for people aged 80–89 years, who were expected to have a high prevalence of LBP. Second, the onset mode (acute or chronic LBP) was not specified; therefore, the prevalence of LBP according to onset mode is not known. Furthermore, the effect of LBP on absence from work and efficiency during work, which is imperative for the working population, has not been comprehensively examined.

To this end, the Clinical Research Committee of the Japanese Society of Lumbar Spine Disorders initiated a nationwide survey on LBP in 2023. By analyzing the prevalence of LBP, its prevalence by onset mode and exploratory risk factors, and its impact on daily life and work productivity in a nationally representative sample of Japan's aging population compared to 20 years ago, the findings are expected to serve as a basis for developing health promotion measures in local communities and occupational areas.

* The Comprehensive Survey of Living Conditions has been conducted since 1986 on a randomly selected sample of Japanese residents to understand basic aspects of their lives (such as health, medical care, pensions, welfare, and income). Survey items regarding health and medical care were collected every three years.

2. Objectives of the Survey

1) To determine the prevalence of LBP in Japan

① To estimate the prevalence of LBP (including the onset mode) and the prevalence of LBP requiring treatment in Japan.

② To obtain the prevalence by age and sex

2) To clarify the impact of LBP on daily lives and society

① To determine the impact of LBP on generic health-related quality of life scale (SF-36)

② To clarify the behaviors of patients with LBP in seeking treatment

③ To clarify the extent to which patients with LBP are absent from work and household activities.

3) To examine the impact of LBP on work productivity

4) To examine the relationship between LBP and its risk factors by onset mode

3. Methodology of the Survey

3.1 Study participants

Approximately 5,000 Japanese adults were randomly sampled from the Japanese population with or without LBP (i.e., those aged 20–90 years who were able to complete the questionnaire).

3.2 Survey procedure

1) Research design

A cross-sectional observational study was conducted from June 17, 2023, to July 17, 2023, using a self-administered placement method.

2) Survey protocol

A stratified two-stage random sampling method was used. The country was divided into 65 strata based on 11 geographic regions and five city-size categories. Large cities were classified individually (20 government-designated cities and the Tokyo special wards), forming 21 strata, while the remaining areas were stratified by combining the 11 regions with four non–large-city size categories, resulting in 44 strata. Sampling locations were allocated to each stratum according to the population distribution of the 2020 Population Census. Consequently, 250 locations were randomly selected, and 20 residents were randomly selected from each location, yielding 5,000 individuals. No re-sampling was performed.

After sending a letter requesting survey participation to candidate participants in advance, surveyors visited their homes and hand-delivered survey forms enclosed in detention envelopes for them to fill out. At collection, the surveyors confirmed with the participants or their live-in family members that the participants had filled out the survey forms themselves and then retrieved the forms in enclosed envelopes. Participants were rewarded with a gift card for completing the survey. In addition, double postcards were sent to 20% of the respondents (439 people) to confirm that the forms had been handed in and collected by the surveyors to ensure that the survey had been conducted properly. Sampling, fieldwork, and data entry were conducted by Nippon Research Center, Ltd.

3) Definition of LBP

LBP was defined as pain in the area on the posterior aspect of the body between the 12th rib and the lower gluteal folds, lasting at least 24 h in the past month. To help define the location of LBP, an illustration of a human figure was used to indicate the 12th rib to the lower gluteal folds. In addition, by asking the participants to choose how long the LBP had occurred, we defined acute LBP as < 1 month, subacute LBP as between 1 and 3 months, and chronic LBP as ≥ 3 months.

4) Measured items

The presence of LBP; degree of LBP (visual analog scale [VAS]); demographics such as age, occupation, comorbidities, and marital status; and items such as generic health-related quality of life (QOL), work productivity, and psychosocial factors were investigated using a self-administered questionnaire.

Regarding LBP, information on whether LBP requiring treatment ever occurred and diagnostic categories for LBP were collected. In addition, regarding LBP that was present during the survey, the degree of LBP, how long the LBP had occurred before, the way the LBP occurred, and care-seeking behaviors were surveyed.

Generic health-related QOL indices were assessed using the Japanese version of the SF-36 v.2.0, [6,7] with higher SF-36 scores indicating better QOL.

Regarding psychosocial factors, life stress was measured using the Japanese version of the Perceived Stress Scale (PSS). [8,9] This scale measures the level of perceived stress in various situations in one's life rather than the occurrence of stressful life events. Higher scores indicate higher stress levels. Work productivity was assessed using the Japanese version of the Work Productivity and Activity Impairment Questionnaire: General Health v.2.0 (WPAI:GH). [10,11] The WPAI:GH assesses the extent to which working time and productivity have been impaired over the past 7 days. The percentage of work time lost, percentage of impairment during work, percentage of overall work impairment (a combination of the first two), and percentage of impairment during daily activities were calculated as percentages, with higher percentages indicating higher levels of impairment. Depressive levels were assessed using the "Mental Health" domain from the SF-36. [6,7] A higher score indicated lower depression levels. Demographics, birth date, sex, comorbidities, marital status, educational level, and occupational status were included.

4. Background of all respondents

Responses were obtained from 2,188 of 5,000 participants (response rate = 43.8%). The mean age was 56.0 years, and 47.1% were men. Participant comorbidities, educational level, household income, marital status, and occupational status are shown in Table 4-1.

Table 4-1. Respondent backgrounds

	N = 2188
Mean age (standard deviation)	56.0 (17.6)
Men (%)	1031 (47.1)
Number of comorbidities (%)	
0	1038 (47.4)
1-2	946 (43.2)
3 ≤	204 (9.3)
Educational level (%)	
Elementary school/Junior high school	160 (8.7)
High school	749 (40.6)
Professional training college	213 (11.6)
Junior college	185 (10.0)
University	479 (26.0)
Graduate school	54 (2.9)
Others	3 (0.2)
Annual household income (%)	
<3 million yen	520 (28.5)
3–<5 million yen	530 (29.0)
5–<7 million yen	362 (19.8)
7–<10 million yen	260 (14.2)
10–<12 million yen	80 (4.4)
12 million yen ≤	73 (4.0)
Marital status	
Unmarried	386 (17.9)
Married	1453 (67.5)
Divorced/Separated	161 (7.5)
Bereaved	151 (7.0)
Other	2 (0.1)
Employment status (yes)	1354 (62.2)

5. Prevalence of LBP

5.1 LBP at the survey

The prevalence of LBP in the previous month was 15.3% among men, 14.7% among women, and 15.0% overall. Among men, the prevalence was low in the 20–29 and 80–89 age groups and high in the 60–69 and 70–79 age groups, compared to other age groups. In contrast, among women, the prevalence was low in the 20–29 and 30–39 age groups, whereas the prevalence was high in the 80–89 and 40–49 age groups (Table 5-1).

Table 5-1. Frequency and prevalence of LBP by sex and age (%)

	Men	Women	Overall
Total	158 15.3%	170 14.7%	328 15.0%
20–29 years	7 7.5%	6 5.9%	13 6.7%
30–39 years	19 15.3%	12 9.5%	31 12.4%
40–49 years	30 17.1%	32 17.7%	62 17.4%
50–59 years	27 14.6%	31 13.8%	58 14.2%
60–69 years	34 20.0%	26 13.8%	60 16.8%
70–79 years	36 18.4%	31 13.7%	67 15.8%
80–89 years	5 5.8%	32 31.1%	37 19.5%

The mean age of respondents with LBP was 59.0 years (SD: 16.5), with minimal sex difference. Compared with the overall respondents, the mean age of respondents with LBP was higher, they had more comorbidities, and were slightly more likely to be divorced or bereaved (Table 5-2).

Table 5-2. Background of respondents with LBP

	Respondents with LBP (n = 328)
Mean age (standard deviation)	59.0 (16.5)
Men (%)	158 (48.2)
Number of comorbidities (%)	
0	31 (11.5)
1–2	101 (37.4)
3 ≤	36 (13.3)
Educational level (%)	26 (9.6)
Elementary school / Junior high school	66 (24.4)
High school	9 (3.3)
Professional training college	1 (0.4)
Junior college	
University	110 (33.5)
Graduate school	158 (48.2)
Others	60 (18.3)
Annual household income (%)	
<3 million yen	93 (33.9)
3–<5 million yen	78 (28.5)
5–<7 million yen	44 (16.1)
7–<10 million yen	40 (14.6)
10–<12 million yen	12 (4.4)
12 million yen ≤	7 (2.6)
Marital status	
Unmarried	44 (13.6)
Married	215 (66.4)
Divorced/Separated	35 (10.8)
Bereaved	30 (9.3)
Other	0 (0)
Employment status (yes)	202 (62.4)

5.2 Point Prevalence of LBP by Onset Mode

Table 5-3 shows the results of the prevalence of LBP by mode of onset (acute, subacute, or chronic) according to age. The overall prevalence of acute, subacute, and chronic LBP were 2.5%, 1.0%, and 11.5%, respectively. Concerning the prevalence of acute LBP, the most prevalent age groups were 40–49 and 30–39 years, whereas those with low prevalence were 80–89 years and 20–29 years. In terms of the prevalence of chronic LBP, the most prevalent age groups were 80–89 and 60–69 years, whereas those with low prevalence were 20–29 and 30–39 years.

Table 5-3. Frequency and prevalence of LBP by onset mode (%)

	Acute LBP	Subacute LBP	Chronic LBP
Total	54 2.5%	21 1.0%	250 11.5%
20–29 years	2 1.0%	1 0.5%	10 5.1%
30–39 years	9 3.6%	1 0.4%	20 8.0%
40–49 years	14 3.9%	3 0.9%	44 12.4%
50–59 years	11 2.7%	7 1.7%	40 9.8%
60–69 years	7 2.0%	4 1.1%	49 13.7%
70–79 years	9 2.1%	5 1.2%	52 12.3%
80–89 years	2 1.1%	0 0.0%	35 18.4%

6. Proportion and characteristics of respondents with LBP requiring treatment

6.1 LBP requiring treatment (including acupuncture, massage, etc.)

The survey included questions on whether the participants had ever experienced LBP requiring treatment. Among men, 43.9% experienced LBP requiring treatment. By age group, the percentages were 19.4% for 20–29 years, 36.3% for 30–39 years, 50.6% for 40–49 years, 52.7% for 50–59 years, 52.4% for 60–69 years, 44.1% for 70–79 years, and 32.6% for 80–89 years, with a peak in the 50–59 to 60–69 years age groups. In contrast, 43.6% of women experienced LBP, with a peak in the 50–59 years age group.

6.2 Proportion of Recurring LBP Requiring Treatment Every Year

Among those who experienced LBP requiring treatment, 38.6% experienced LBP recurrence annually. Among men and women, 34.0% and 42.7% had recurring LBP, respectively, and a higher proportion of women than men in the 20-29- and 80-89-years age groups had LBP recurrence every year (Table 6-2).

Table 6-1. History of LBP requiring medical treatment (by sex and age)

		Yes	No
Men	20–29 years	18 19.4%	75 80.7%
	30–39 years	45 36.3%	79 63.7%
	40–49 years	88 50.6%	86 49.4%
	50–59 years	97 52.7%	87 47.3%
	60–69 years	87 52.4%	79 47.6%
	70–79 years	86 44.1%	109 55.9%
	80–89 years	28 32.6%	58 67.4%
	Total	449 43.9%	573 56.1%
Women	20–29 years	16 15.8%	85 84.2%
	30–39 years	45 35.4%	82 64.6%
	40–49 years	85 47.2%	95 52.8%
	50–59 years	116 52.0%	107 48.0%
	60–69 years	90 48.1%	97 51.9%
	70–79 years	95 42.4%	129 57.6%
	80–89 years	52 50.5%	51 49.5%
	Total	499 43.6%	646 56.4%

Table 6-2. Frequency and proportion of LBP that requires treatment and recurs yearly (by sex and age)

		Yes	No
Men	20–29 years	3 18.8%	13 81.2%
	30–39 years	10 23.3%	33 76.7%
	40–49 years	32 38.1%	52 61.9%
	50–59 years	35 37.2%	59 62.8%
	60–69 years	27 32.5%	56 67.5%
	70–79 years	30 36.1%	53 63.9%
	80–89 years	8 33.3%	16 66.7%
	Total	145 34.0%	282 66.0%
Women	20–29 years	9 60.0%	6 40.0%
	30–39 years	15 34.1%	29 65.9%
	40–49 years	39 47.0%	44 53.0%
	50–59 years	47 40.9%	68 59.1%
	60–69 years	31 36.5%	54 63.5%
	70–79 years	34 37.8%	56 62.2%
	80–89 years	30 62.5%	18 37.5%
	Total	205 42.7%	275 57.3%

The most common diagnosis for LBP requiring treatment was "non-specific low back pain," followed by " I forgot," third was "no abnormality," fourth was "sciatica," and fifth was "lumbar spinal stenosis" (Table 6-3).

Table 6-3. Diagnoses of LBP requiring treatment

	n	%
Non-specific low back pain	241	26.4
I forgot	121	13.3
No abnormality	102	11.2
Sciatica	96	10.5
Lumbar spinal stenosis	67	7.3
Herniation/Herniated disc	61	6.7
I did not hear about it	60	6.6
Lumbar spondylolysis/spondylolisthesis	41	4.5
Sprain/concussion of the lower back	28	3.1
Unknown	24	2.6
Degenerative spondylosis	18	2.0
Other	17	1.9
Lumbar vertebral fracture	15	1.6
Osteoporosis	14	1.5
I asked but no explanation was given	8	0.9

7. Impact of LBP on daily life and society

In this section, we describe the impact of LBP on daily life (quality of life) and society (treatment-seeking behavior, absence from work, and household activities).

Figures 7-1 to 7-3 illustrate the standardized differences in SF-36 scores between the two groups, "with LBP" and "without LBP," by dividing their scores by the SD of the "without LBP" group. In other words, this means that the scores of the "with LBP" group were compared with those of the "without LBP" group at every eight domains of the SF-36 under the assumption that the mean value of the "without LBP" group is 0. The results showed that among the overall population, "bodily pain" had the largest difference, and the scores of the "with LBP" group in the other domains were also lower than those of the "without LBP" group (Fig. 7-1).

Furthermore, by sex and age group, the QOL of the "with LBP" group was lower than that of the "without LBP" group for most domains in both men and women (Figures 7-2 and 7-3). For men at 20–29 years, the difference in QOL between the "without LBP" group and the "with LBP" group was not evident; however, the difference in QOL was more for those between 40–49 and 60–69 years and less for those between 70–79 and 80–89 years (Fig. 7-2). Among women, the difference in QOL between the "without LBP" and "with LBP" groups was considerable, except for the 30–39 years group. In particular, the difference in QOL was substantial among those aged 20–29, 40–49, and 80–89. However, a difference in QOL was not evident in the 30–39 years group, except for bodily pain.

The * (asterisk) in Figures 7-1, 7-2, and 7-3 indicates items with a P value < 0.05 for unpaired Student's *t*-test for the "with LBP" group compared to the "without LBP" group.

Figure 7-1. Mean (standardized) difference between the "with LBP" and "without LBP" groups

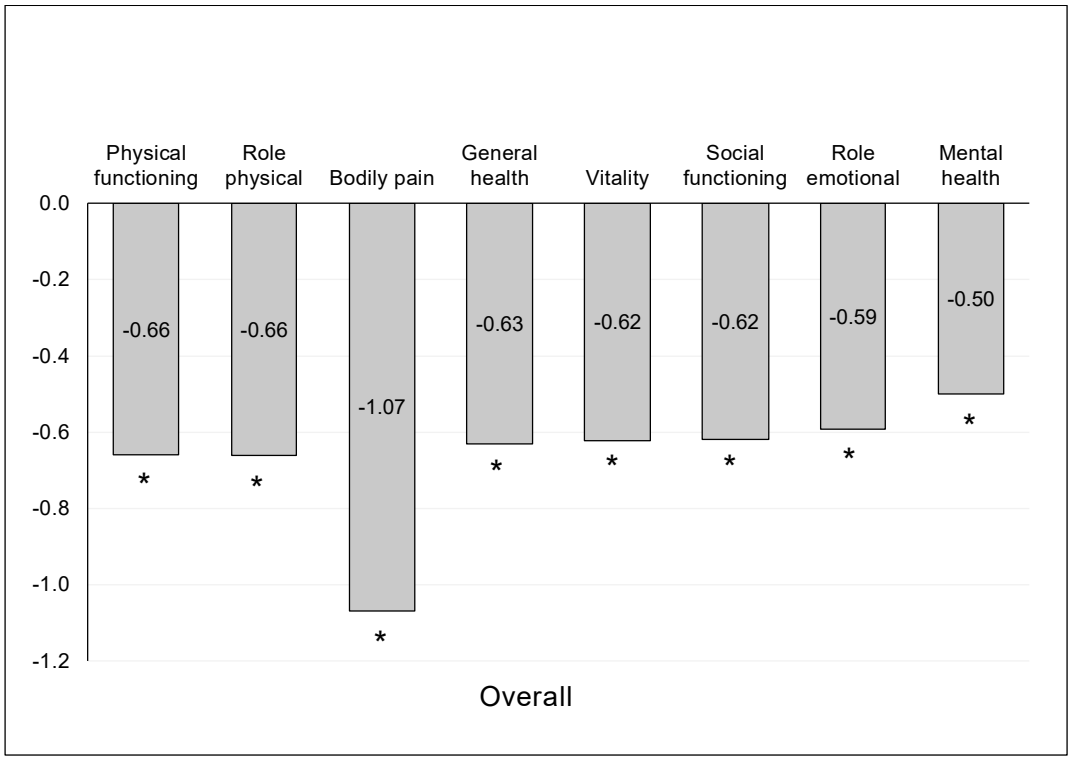
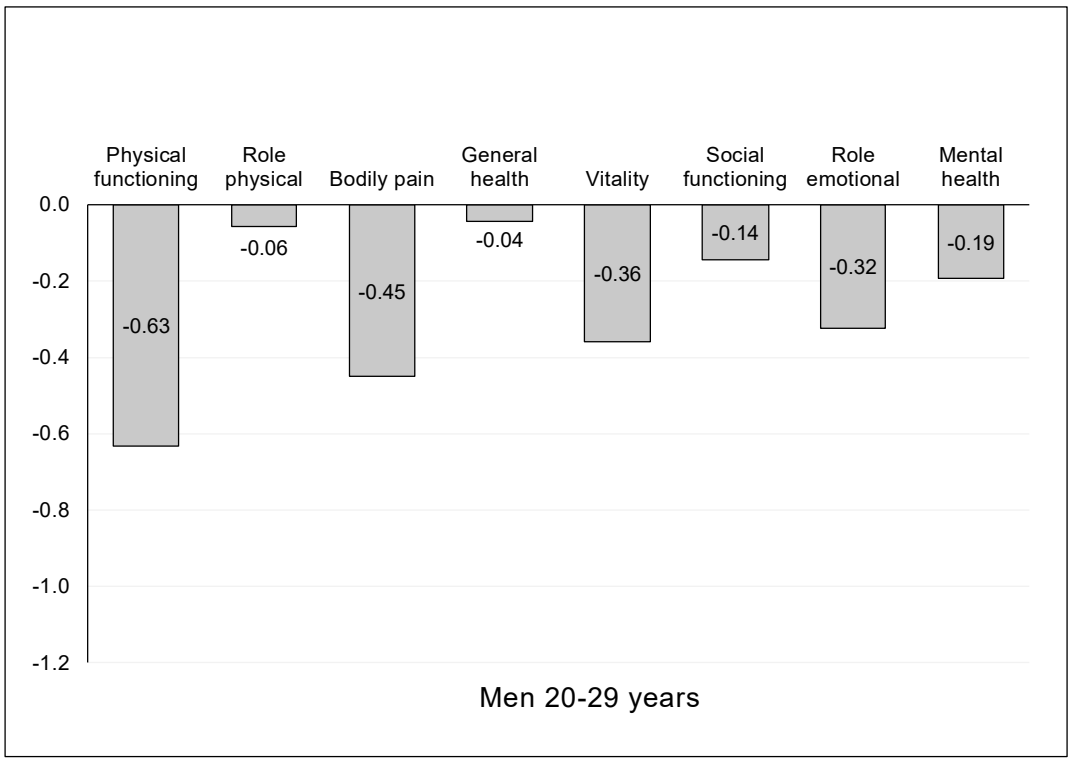
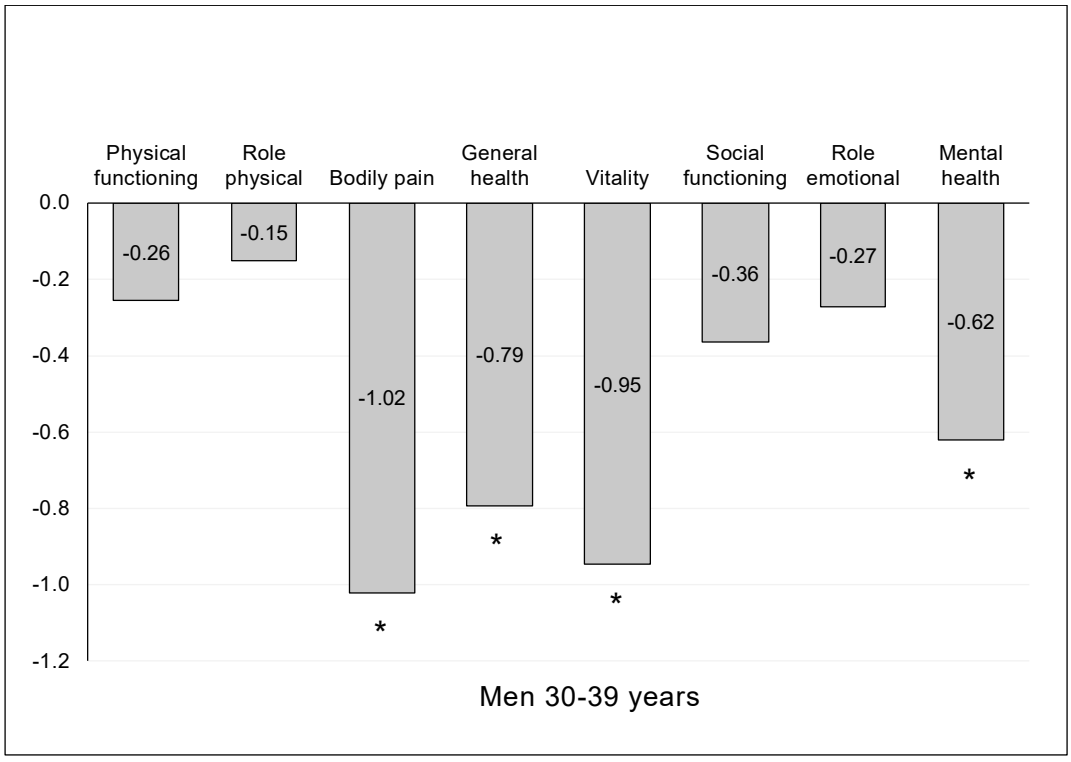
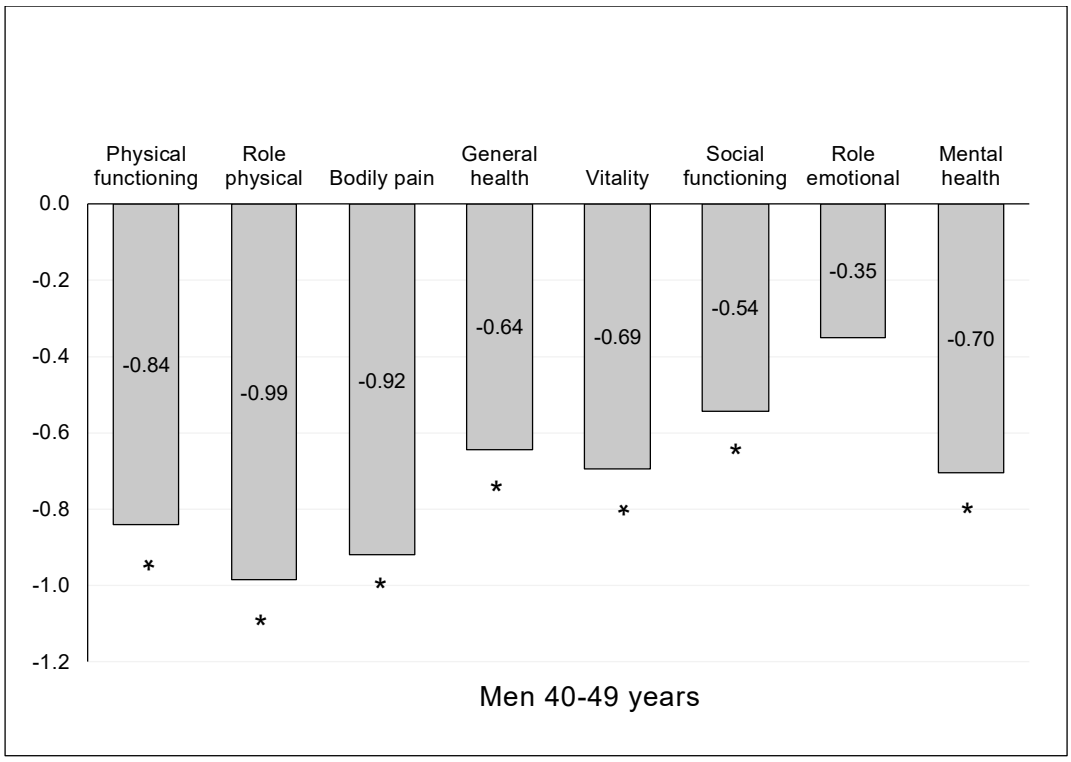
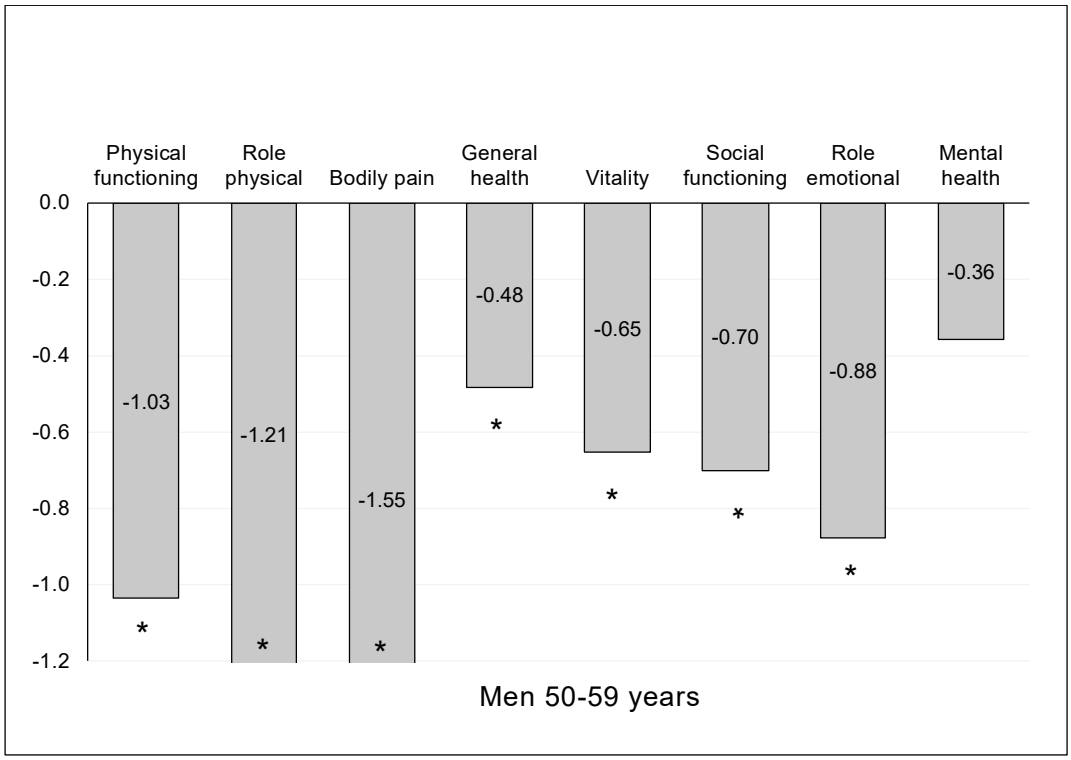


Figure 7-2. Mean (standardized) difference between the "with LBP" and "without LBP" groups for men by age group

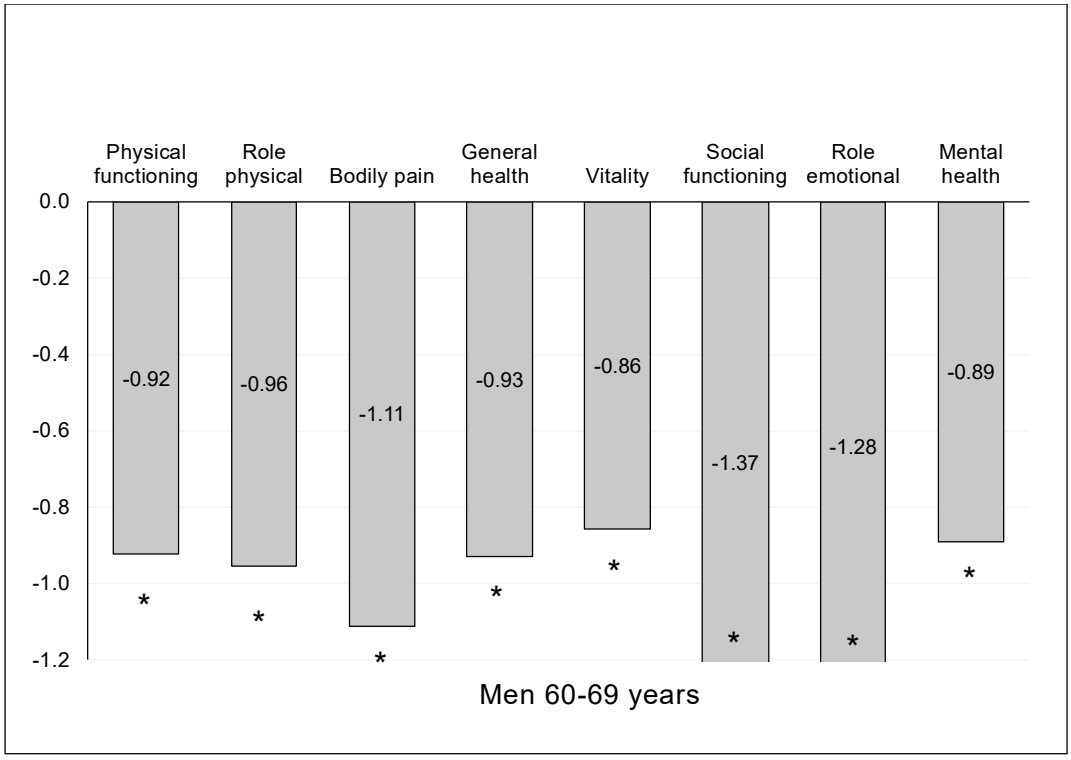



Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.26
-0.15
-1.02
-0.79
-0.95
-0.36
-0.27
-0.62
*
Men 30-39 years

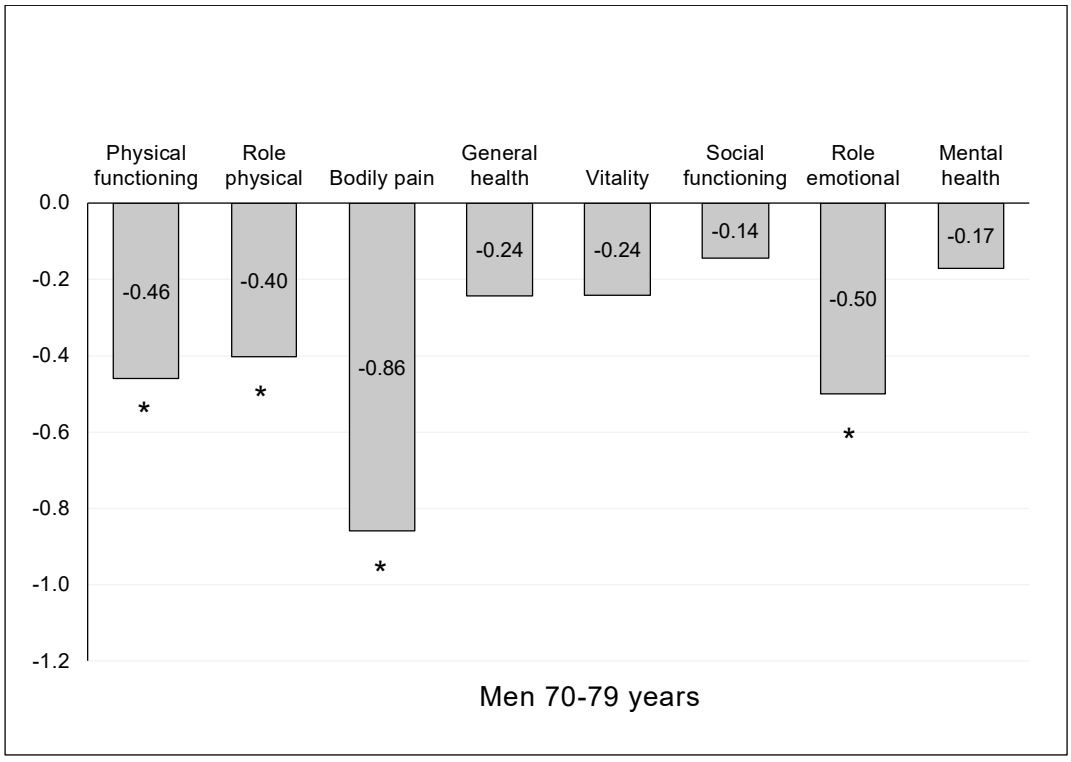

Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.84
-0.99
-0.92
-0.64
-0.69
-0.54
-0.35
-0.70
*
Men 40-49 years



Men 50-59 years



Men 60-69 years


Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.46
-0.40
-0.86
-0.24
-0.24
-0.14
-0.50
-0.17
*
*
*
*
Men 70-79 years

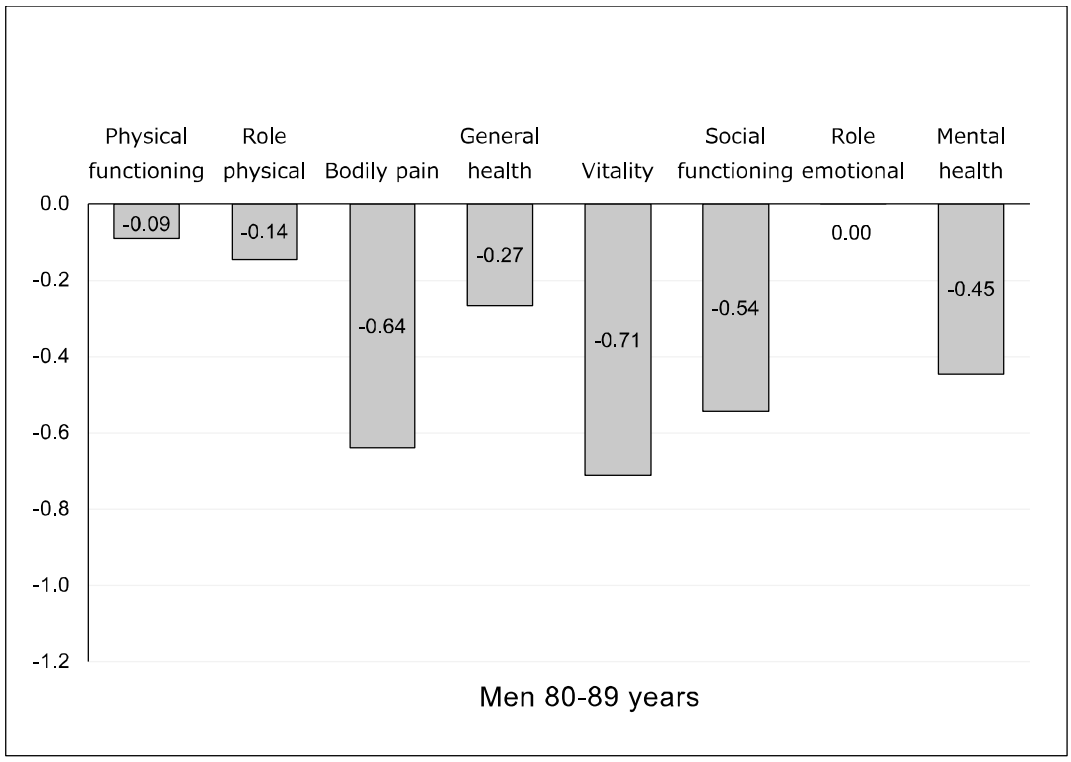
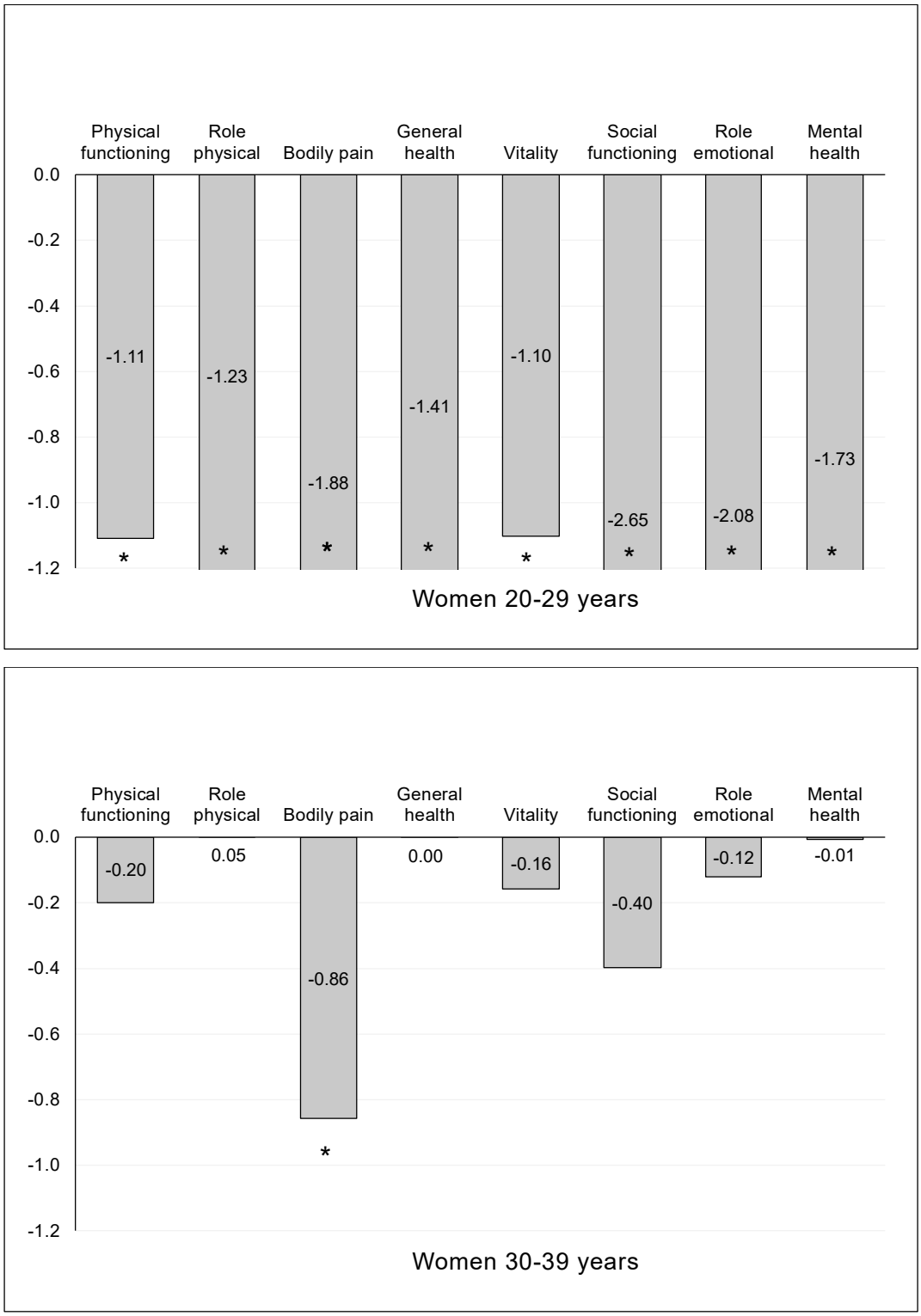
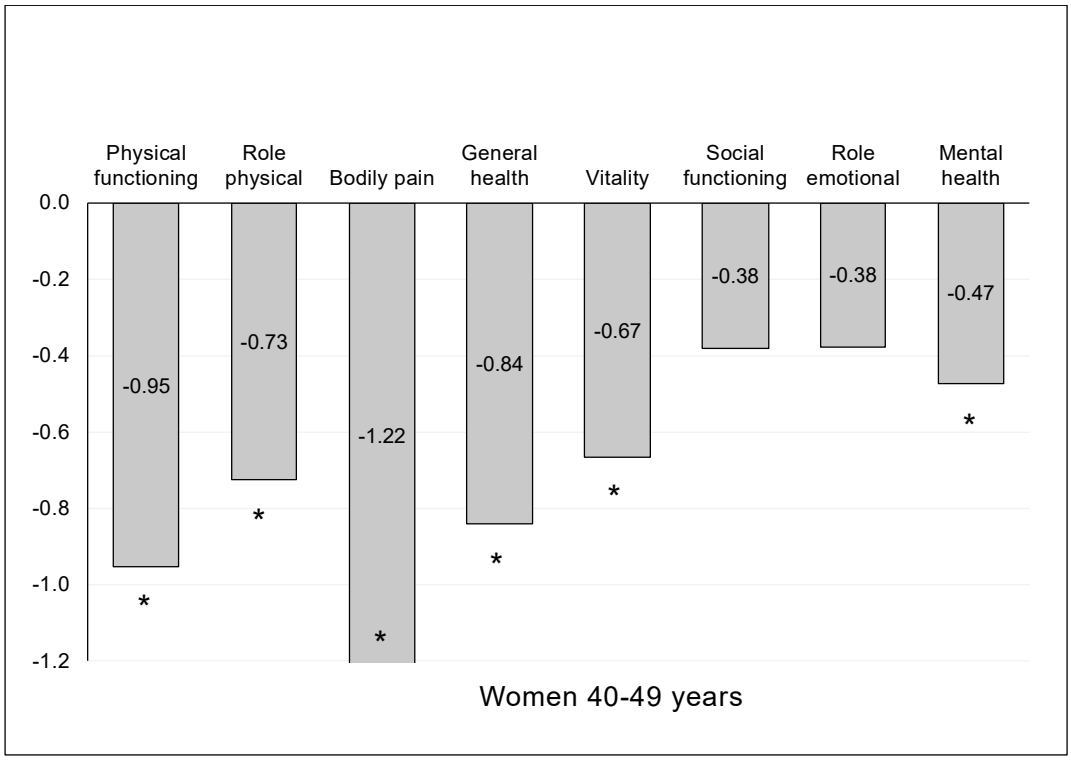
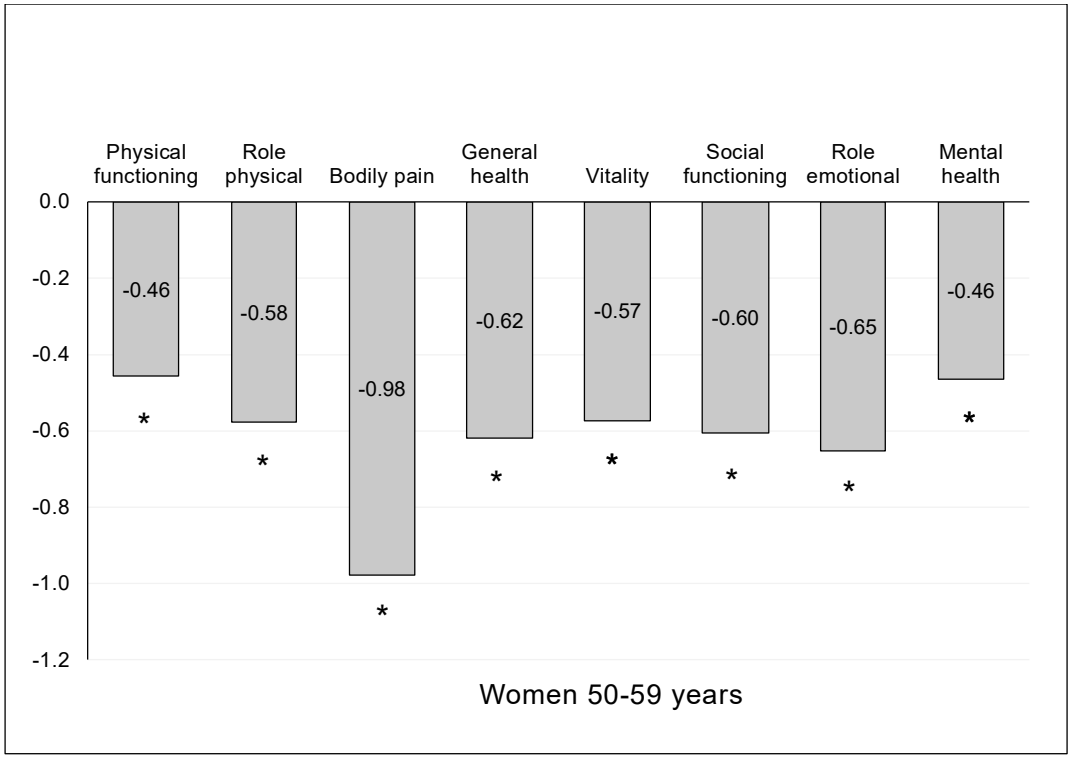
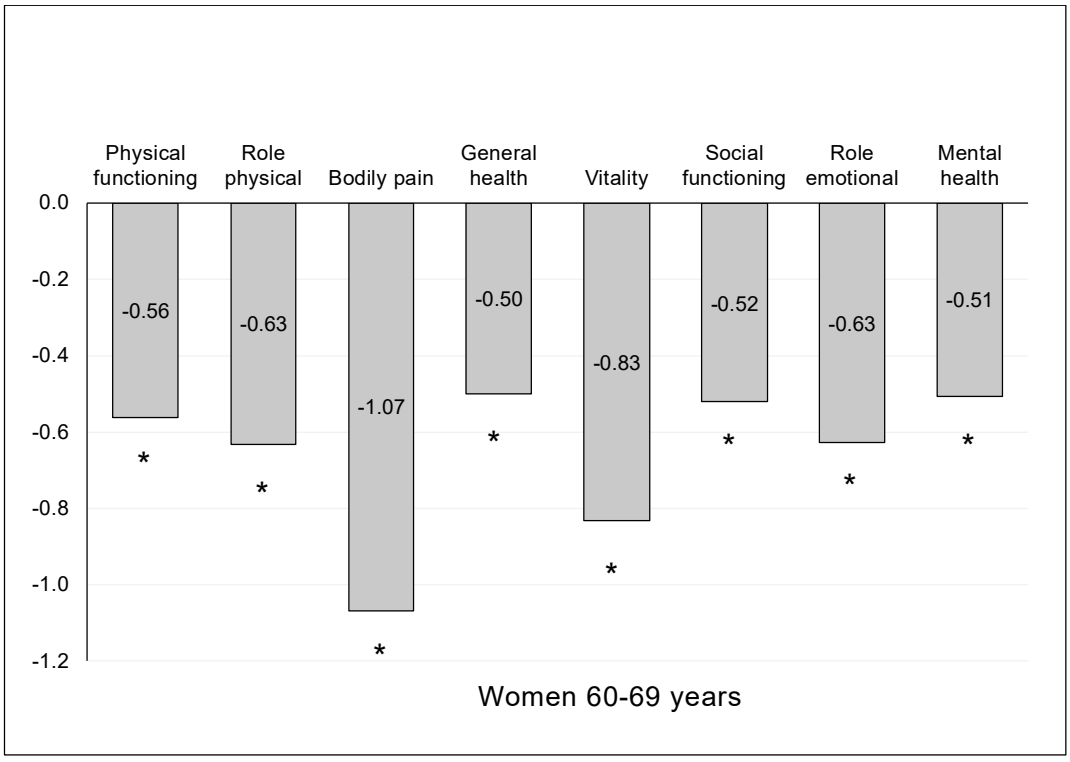

Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.09
-0.14
-0.64
-0.27
-0.71
-0.54
0.00
-0.45
Men 80-89 years

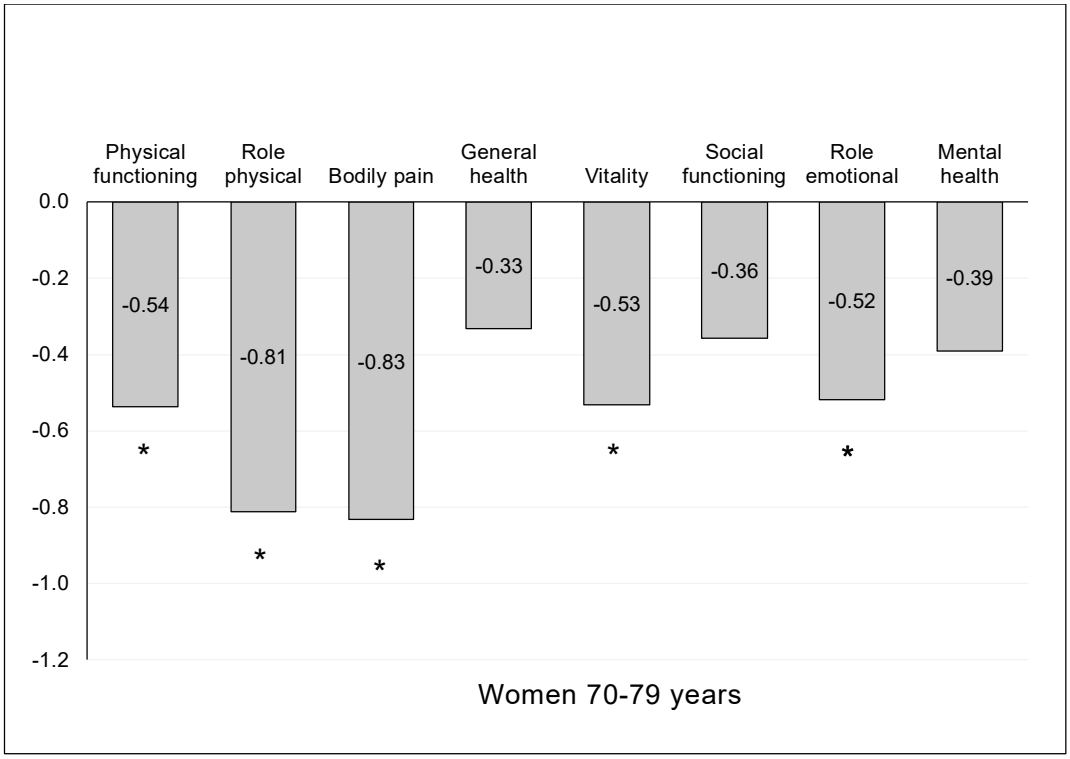
Figure 7-3. Mean (standardized) differences between the "with LBP" and "without LBP" groups for women by age group

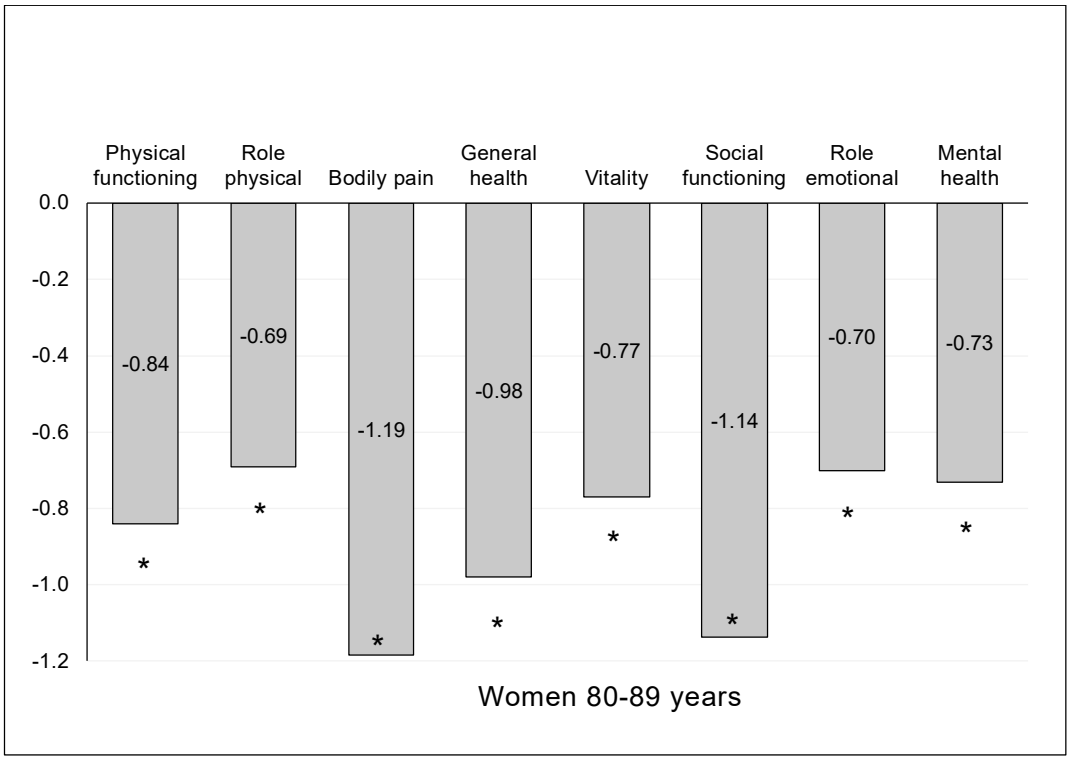



Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.95
-0.73
-1.22
-0.84
-0.67
-0.38
-0.38
-0.47
*
Women 40-49 years


Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.46
-0.58
-0.98
-0.62
-0.57
-0.60
-0.65
-0.46
*
Women 50-59 years


Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.56
-0.63
-1.07
-0.50
-0.83
-0.52
-0.63
-0.51
*
Women 60-69 years


Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.54
-0.81
-0.83
-0.33
-0.53
-0.36
-0.52
-0.39
*
Women 70-79 years


Physical functioning
Role physical
Bodily pain
General health
Vitality
Social functioning
Role emotional
Mental health
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-0.84
-0.69
-1.19
-0.98
-0.77
-1.14
-0.70
-0.73
*
Women 80-89 years

Of the respondents "with LBP" at the time of the survey, 43.3% sought treatment for LBP (including osteopathy, acupuncture, massage, and visits to the hospital Table 7-4). Regarding the number of outpatient visits because of LBP in the past month, the median and mean for all respondents were 0 and 1.8 times, respectively, with an interquartile range of 0–2 times and a standard deviation of 4.0 times. When restricted to respondents who attended outpatient visits, the median was 2, the mean was 4.2 times, the interquartile range was 1–4 times, and the standard deviation was 5.2 times.

Table 7-4. Number of visits for treatment of LBP at the survey

Mean 1.8 times (SD: 4.0)

Counts	n	%
None	170	56.7
Once	45	15.0
Twice	23	7.7
Thrice	16	5.3
Four times	14	4.7
Five times	9	3.0
Six or more times	23	7.6
Total	300	100

Of the respondents "with LBP" at the time of the survey, 1.0% were hospitalized because of LBP (Table 7-5). A total of 14.9% were absent from work or housework because of LBP (Table 7-6). For all respondents, the median and mean number of days of absence from work and household duties due to LBP were 0 and 0.9 days, respectively, with an interquartile range of 0-0 days and a standard deviation of 3.2 days. When restricted to respondents absent from work or household activities, the median was 3.5 days and the mean was 6.2 days, with an interquartile range of 2–10 days and a standard deviation of 6.0 days.

Table 7-5. Proportion of hospitalizations for LBP at the survey

Hospitalization	n	%
Yes	3	1.0
No	287	99.0
Total	290	100

Table 7-6. Days of absence from work or household activities due to LBP at the survey

Mean 0.9 days (SD: 3.2)

Days	n	%
0 day	252	85.1
1 day	8	2.7
2 days	4	1.4
3 days	10	3.4
4 days	3	1.0
5 days	2	0.7
6 days or more	17	5.7
Total	296	100

8. Impact of LBP on work productivity

This section describes the impact of LBP on productivity. Work productivity was assessed using the Work Productivity and Activity Impairment (WPAI) tool, an index of work productivity consisting of four components: percent work time missed, percent impairment while working, percent overall work impairment, and percent activity impairment.

The percentage of work time missed reflects absenteeism, which is the proportion of time missed from work because of health problems over the previous seven days. Percent impairment while working reflects presenteeism, is the proportion of time an individual continues to work but loses productivity due to health problems. The percentage of overall work impairment represents the overall loss of work productivity and reflects both the percentage of work time missed and the percentage loss of productivity while working. Percentage activity impairment is an indicator of the impact of health issues on daily activities and is expressed as a percentage.

The results showed that among the total working population, the "percent impairment while working" for the "with LBP" group was 12.9% higher than the "without LBP" group, and the "percent work time lost" was 2% higher, albeit only slightly (Figure 8-1).

Furthermore, by sex and age group, the difference in the "percent impairment during work" between the "with LBP" and "without LBP" groups was greater among men in the 20–29, 40–49, 50–59, and 60–69 groups, while this difference was not evident among the 30–39 and 70–79 age groups (Figure 8-2). It was only among the 40–49 age group that the "percent work time missed" in the "with LBP" group was higher than in the "without LBP" group. The 80–89 age group could not be analyzed because of the smaller number of workers in this age group. Among women, the difference in the "percent impairment while working" between the "with LBP" and the "without LBP" groups was large for all age groups (Figure 8-3). Only among the 20–29 age group was "percent work time missed" higher in the "with LBP" group than in the "without LBP" group. The 80–89 age group could not be analyzed because there were too few workers in this age group.

The * (asterisks) in Figures 8-1, 8-2, and 8-3 indicate items with a P value < 0.05 for the unpaired Student's *t*-test for the "with LBP" group compared to the "without LBP" group.

Figure 8-1. Difference in mean WPAI values between the "with LBP" and "without LBP" groups

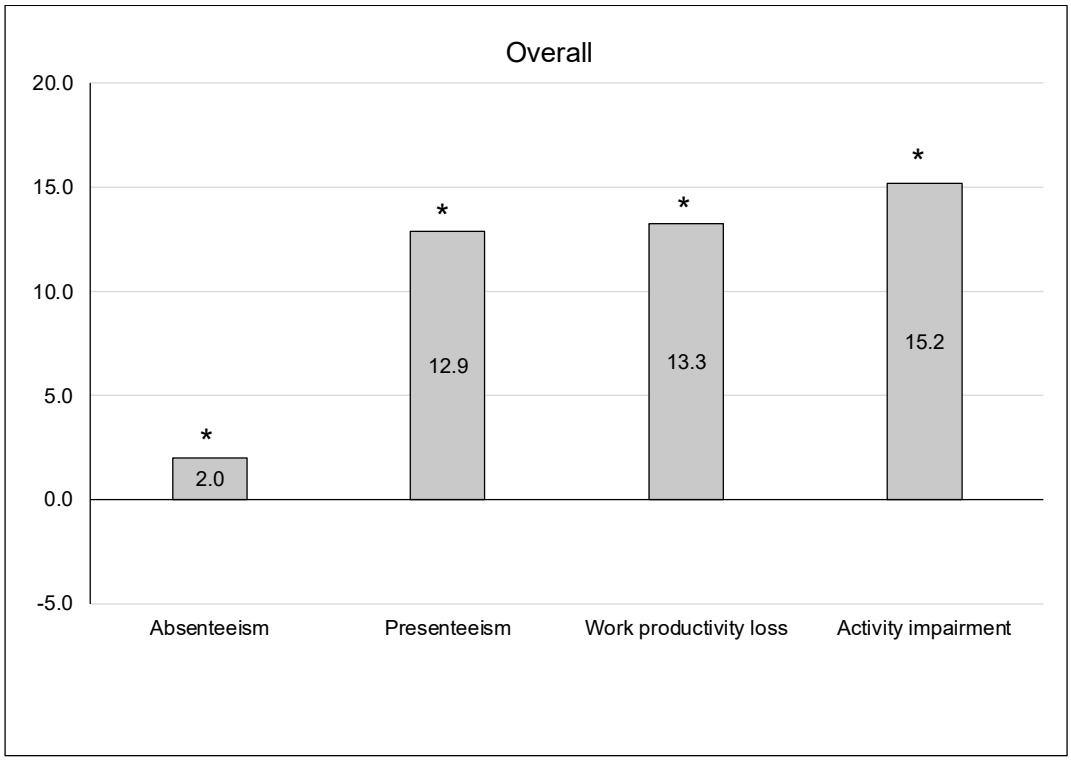
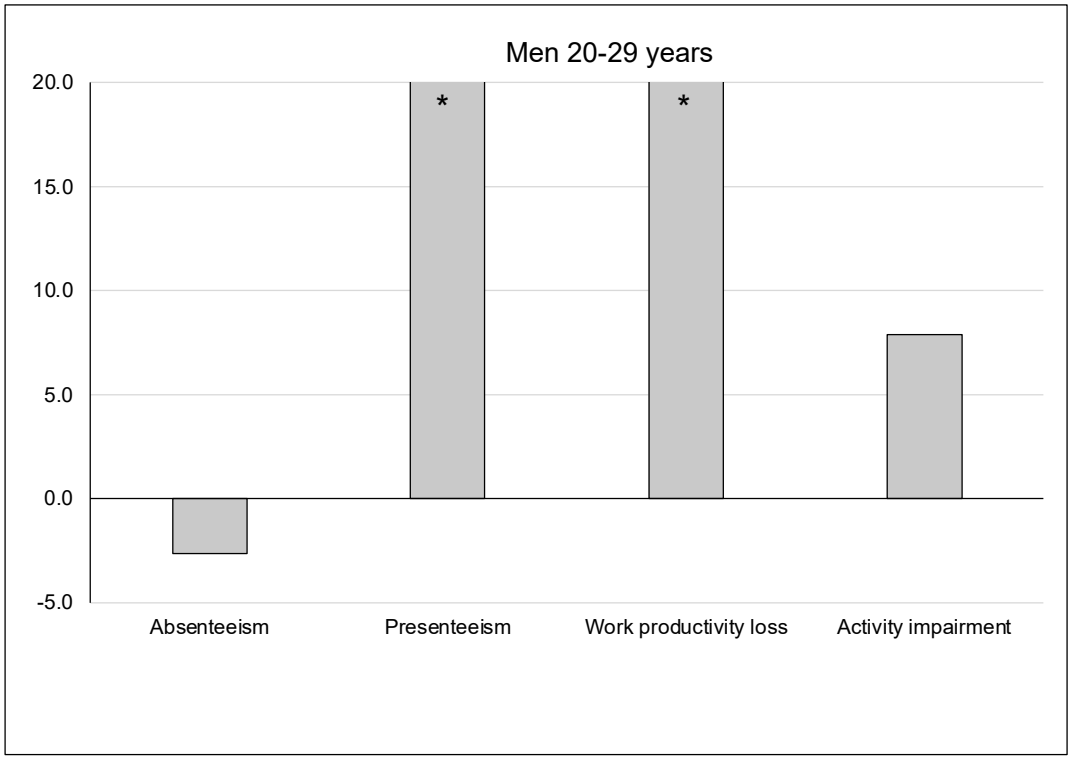
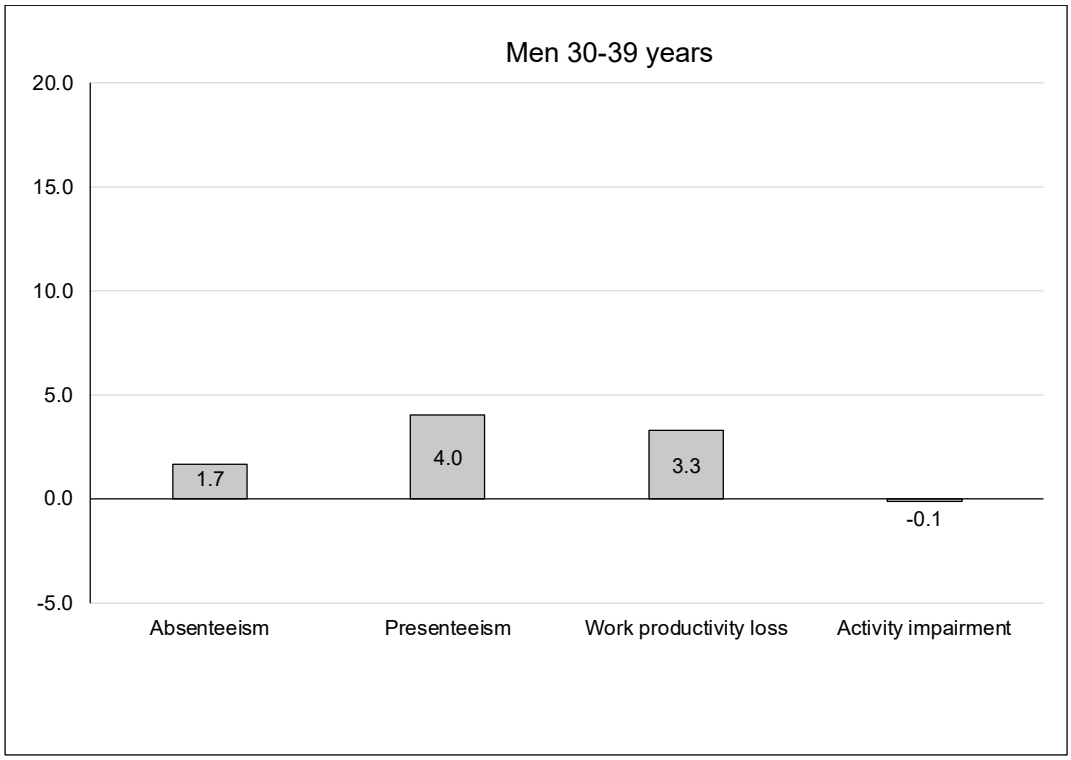
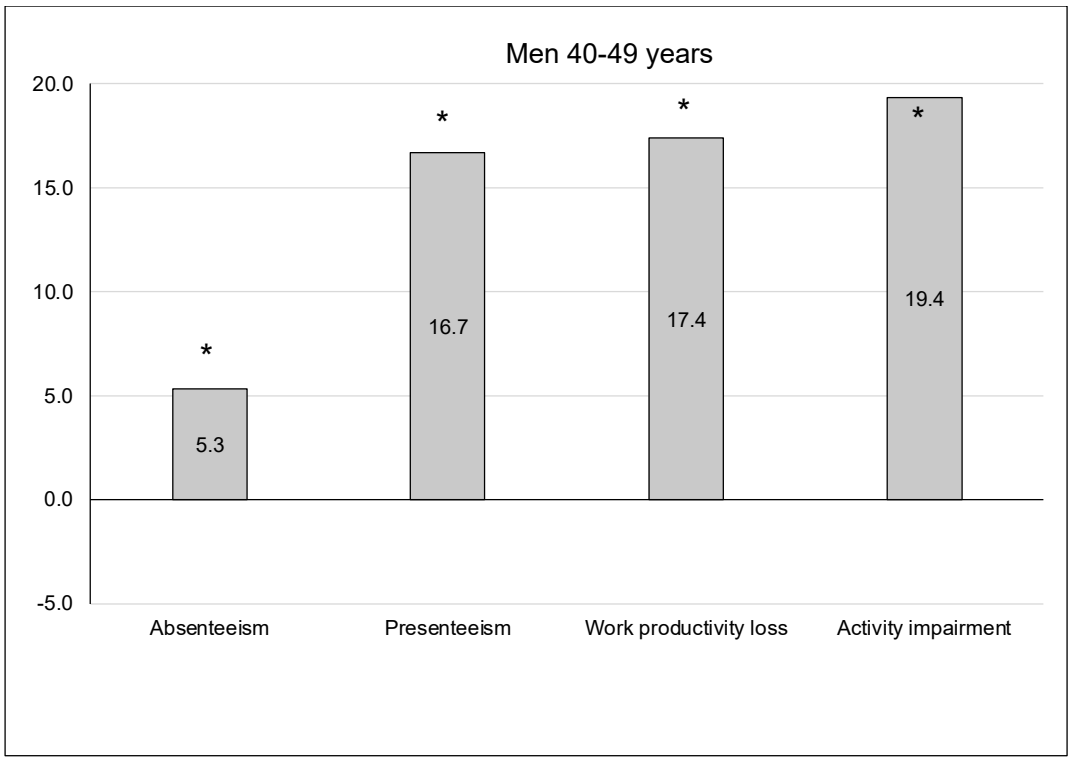
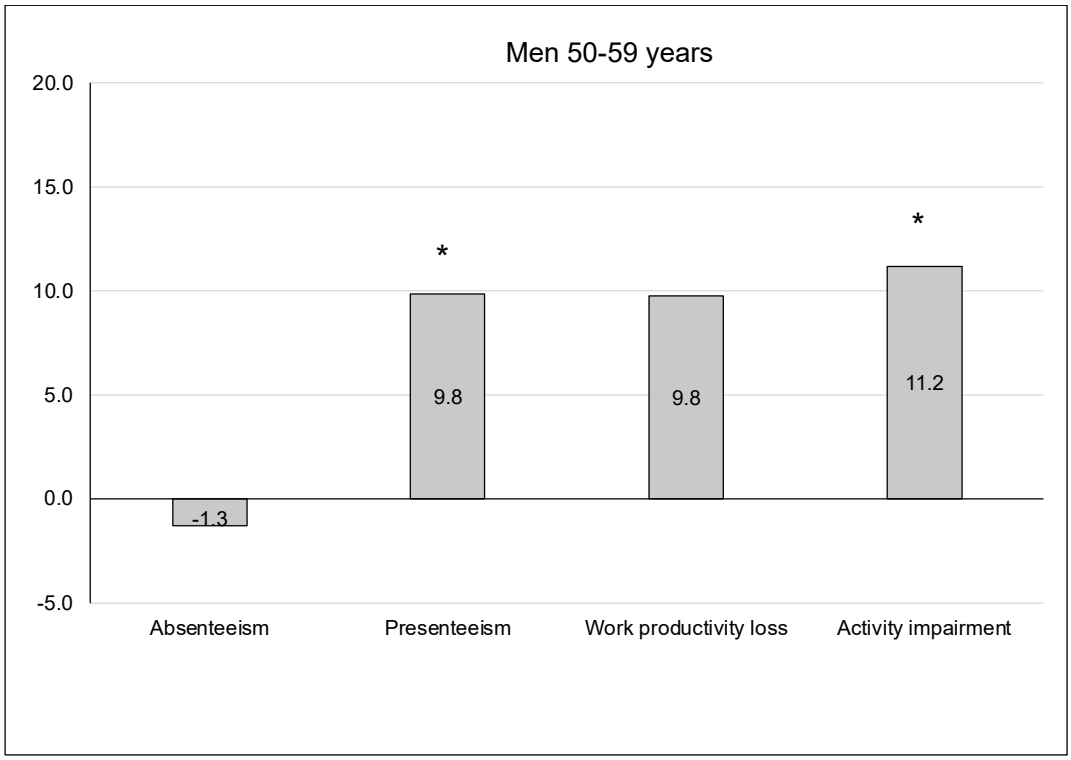


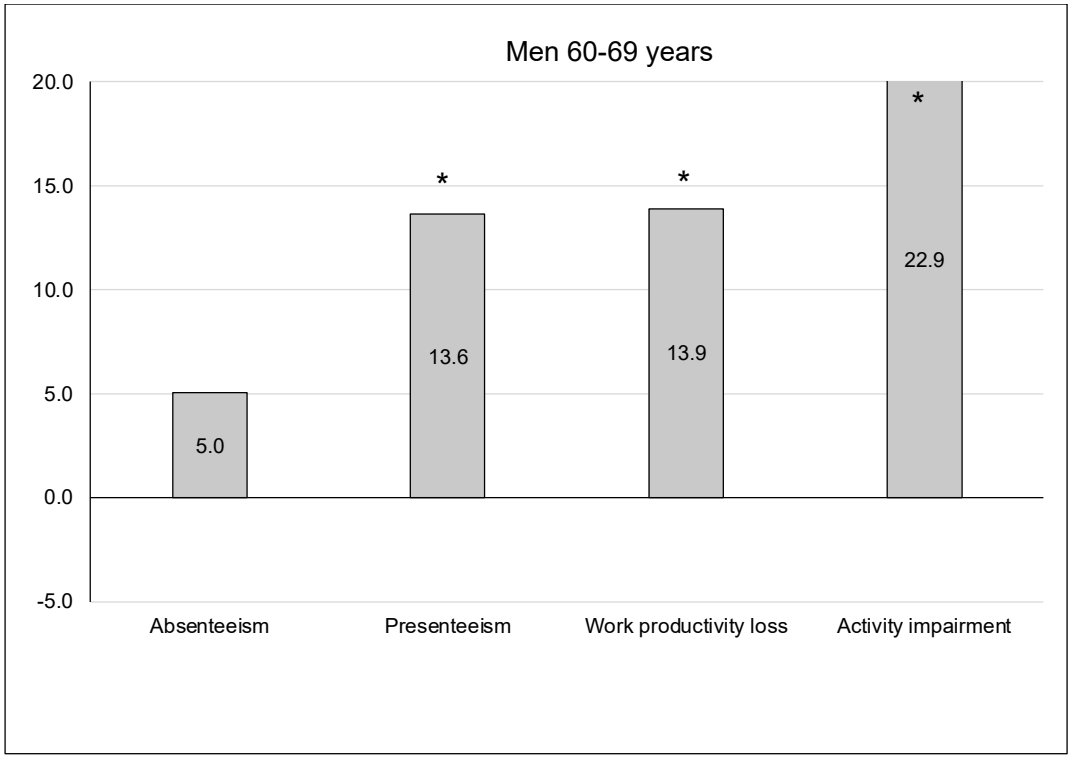
Figure 8-2. Difference in mean WPAI values between "with LBP" and "without LBP" groups for men by age group




Men 30-39 years
20.0
15.0
10.0
5.0
0.0
-5.0
1.7
4.0
3.3
-0.1
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Men 40-49 years
20.0
15.0
10.0
5.0
0.0
-5.0
*
*
*
*
5.3
16.7
17.4
19.4
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Men 50-59 years
20.0
15.0
10.0
5.0
0.0
-5.0
*
*
9.8
9.8
11.2
-1.3
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Men 60-69 years
20.0
15.0
10.0
5.0
0.0
-5.0
*
*
*
13.6
13.9
22.9
5.0
Absenteeism
Presenteeism
Work productivity loss
Activity impairment

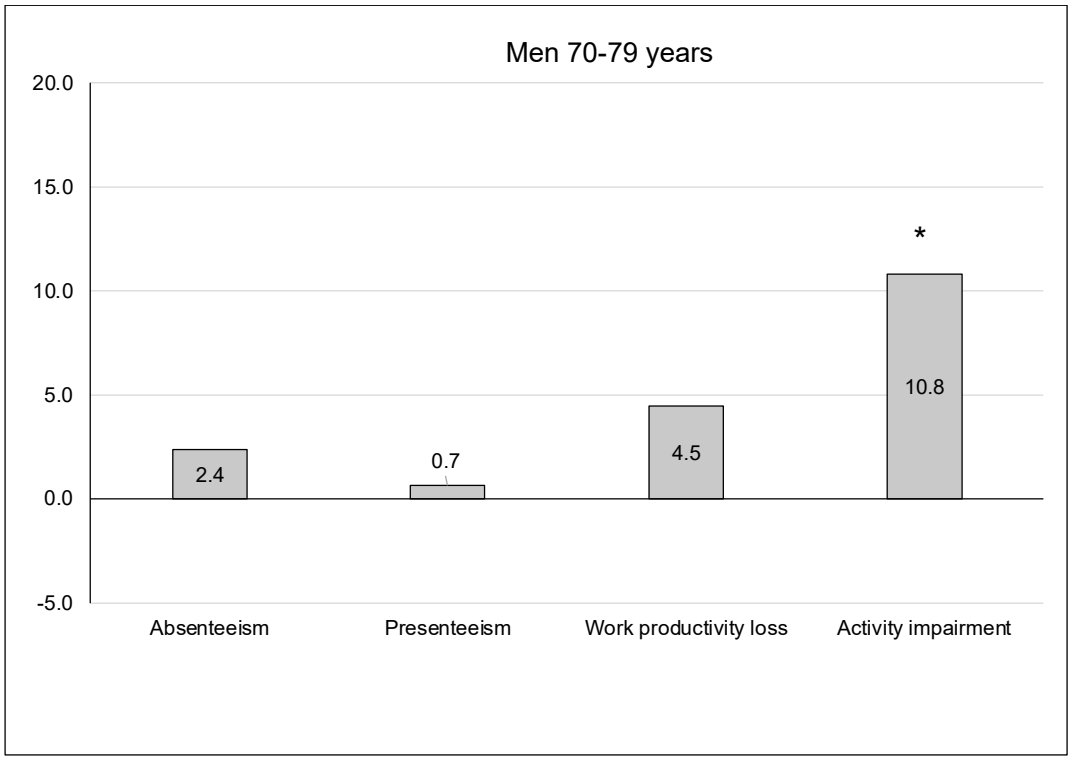
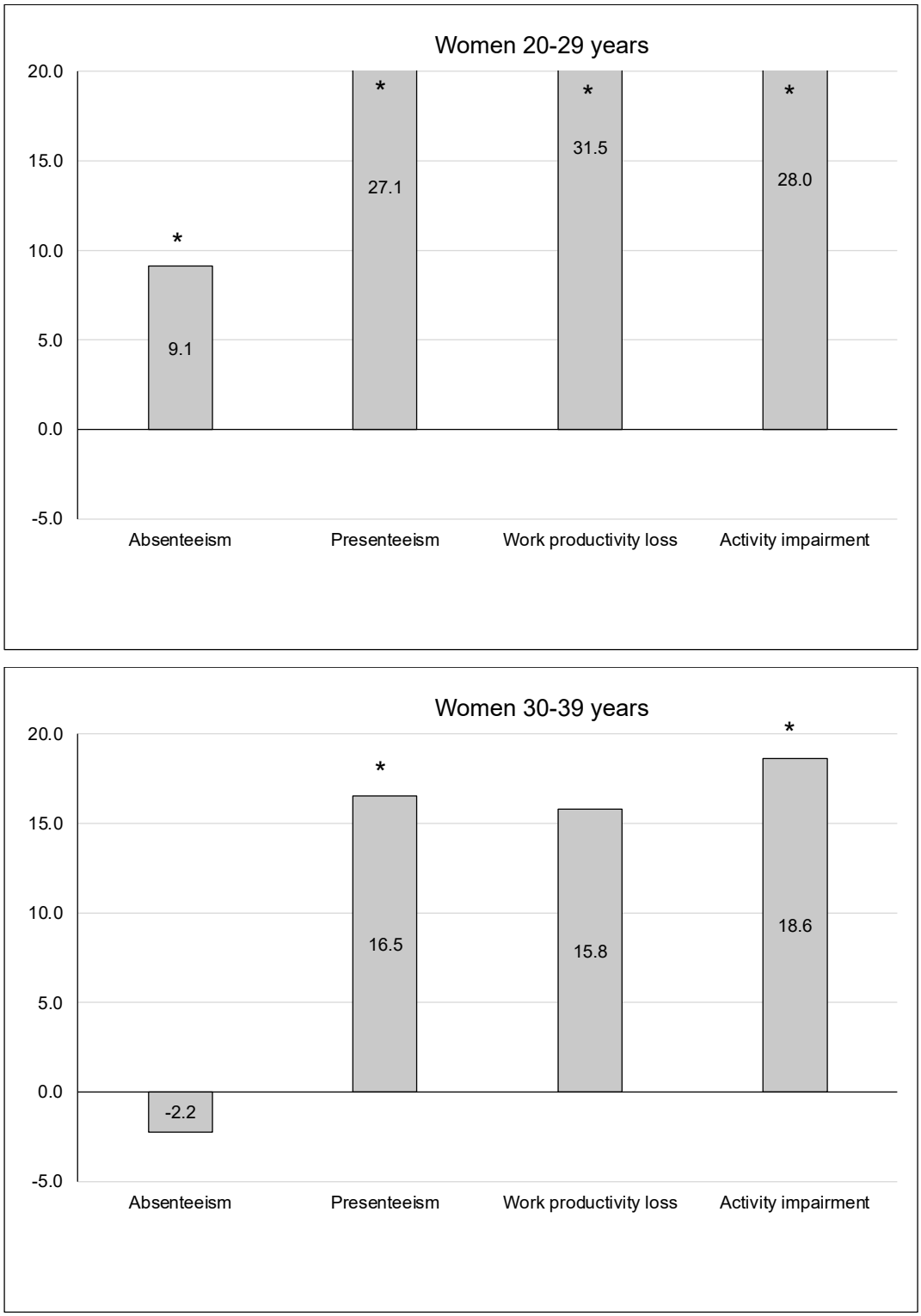
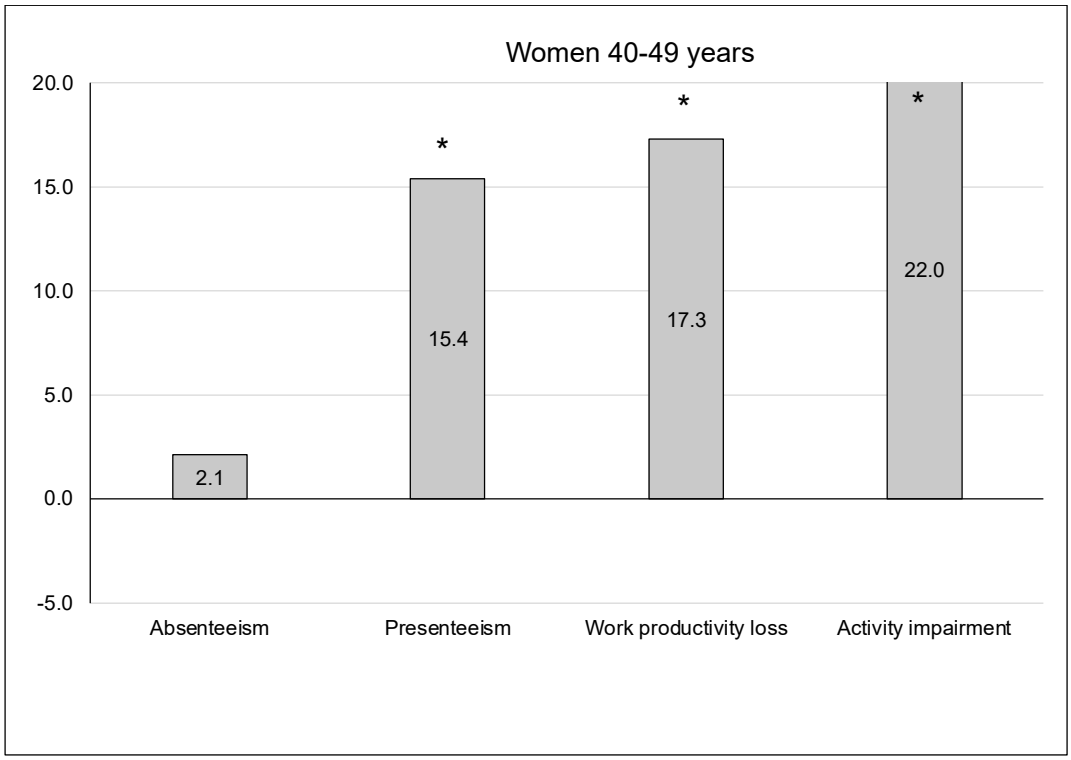
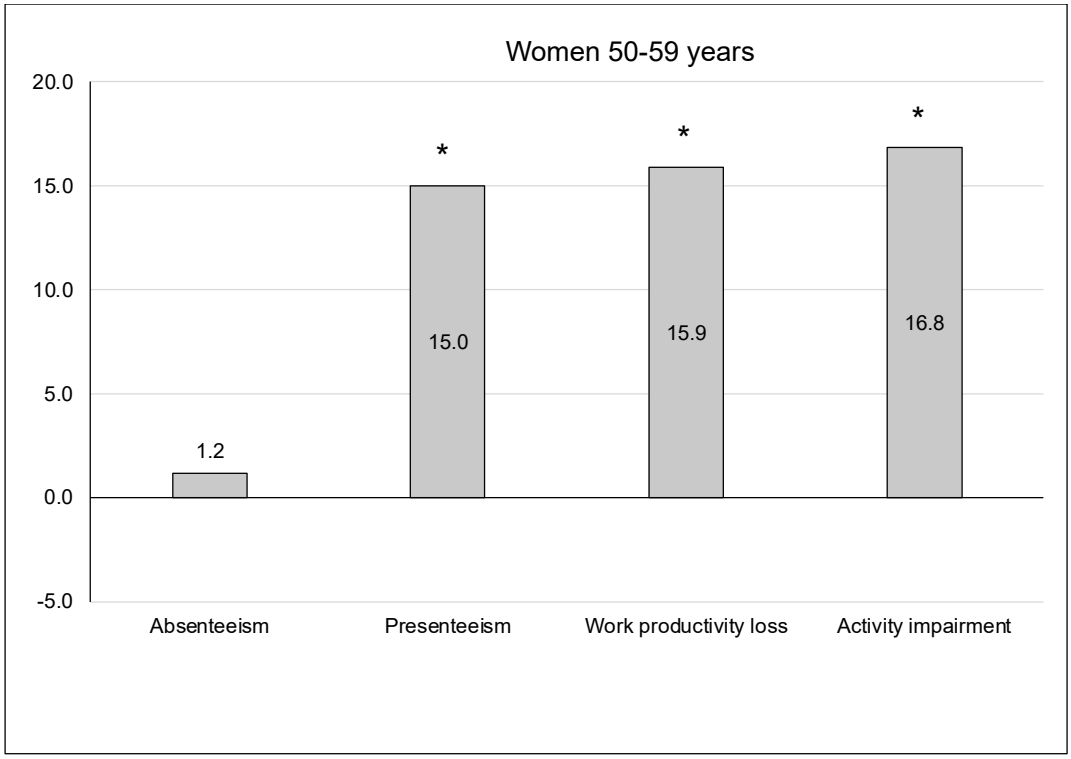
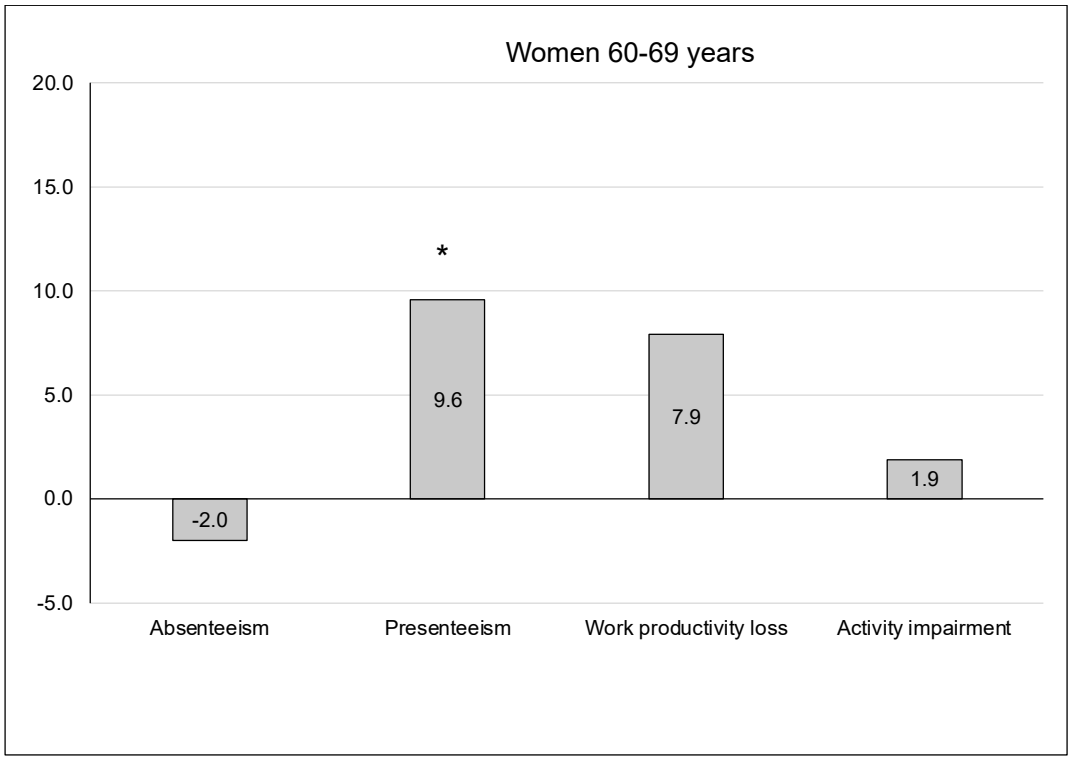

Men 70-79 years
20.0
15.0
10.0
5.0
0.0
-5.0
2.4
0.7
4.5
10.8
*
Absenteeism
Presenteeism
Work productivity loss
Activity impairment

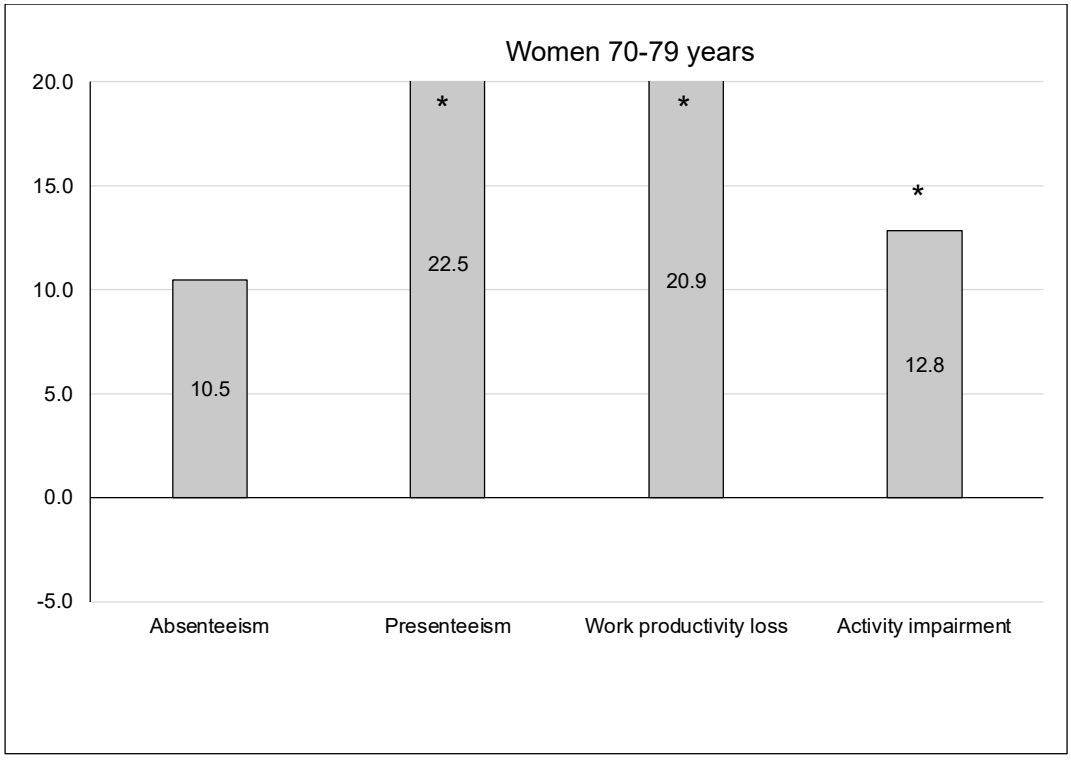
Figure 8-3. Difference in mean WPAI values between "with LBP" and "without LBP" groups for women by age group




Women 40-49 years
20.0
15.0
10.0
5.0
0.0
-5.0
2.1
15.4
17.3
22.0
*
*
*
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Women 50-59 years
20.0
15.0
10.0
5.0
0.0
-5.0
1.2
15.0
15.9
16.8
*
*
*
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Women 60-69 years
20.0
15.0
10.0
5.0
0.0
-5.0
*
9.6
7.9
1.9
-2.0
Absenteeism
Presenteeism
Work productivity loss
Activity impairment


Women 70-79 years
20.0
15.0
10.0
5.0
0.0
-5.0
*
*
*
22.5
20.9
12.8
10.5
Absenteeism
Presenteeism
Work productivity loss
Activity impairment

9. Factors associated with point prevalence of LBP

The risk factors associated with the point prevalence of LBP by onset mode were examined in an exploratory analysis. We investigated whether age, sex, psychosocial factors, smoking, body mass index (BMI), exercise habits, occupation, and comorbidities, which have been shown in previous studies to be risk factors for LBP, were associated with chronic or acute/subacute LBP. Given the small number of respondents with subacute LBP, this was combined with acute LBP as a single variable. Multinomial logistic regression analysis was performed with the nominal variable indicating the onset mode of LBP as the dependent variable (acute/subacute LBP, chronic LBP, or no LBP) and the above risk factors as explanatory variables. The analysis involved 2,184 respondents who reported either a specific onset mode of LBP or no LBP. For missing explanatory variables, ten sets of imputed data were created using the multiple imputation method, and the regression analysis results for each set were combined.

The odds of prevalent acute/subacute LBP were 2.5 times higher for one comorbidity (P = 0.001), 2.5 times higher for two or more comorbidities (P = 0.051), and 3.2 times higher for those aged 40–49 (P = 0.069) than for those aged 20–29 (Table 9-1).

The odds of prevalent chronic LBP were greater in higher age groups (2.7 times for 40–49 years, 2.0 times for 50-59 years, 3.4 times for 60–69 years, 3.2 times for 70–79 years, and 4.9 times for 80–89 years) compared to 20–29 years, 1.03 times higher per 1 point higher stress scale (Japanese version of the PSS) score, 0.96 times higher per 1 point higher mental health (SF-36) score (i.e., less depressive level), 1.8 times higher for smoking, and 2.5 times higher for ≥ 2 comorbidities (Table 9-2).

Table 9-1. Risk factors for acute/subacute LBP

		Odds Ratio	95%CI		P Value
Sex	Men	Ref.	-		-
	Women	0.716	0.434	1.181	0.191
Age group	20–29 years	Ref.	-		-
	30–39 years	2.734	0.735	10.167	0.133
	40–49 years	3.182	0.912	11.102	0.069
	50–59 years	2.633	0.753	9.206	0.130
	60–69 years	1.876	0.501	7.025	0.350
	70–79 years	2.101	0.550	8.029	0.278
	80–89 years	0.727	0.110	4.809	0.741
PSS		1.014	0.976	1.052	0.479
SF-36 Mental health		0.989	0.959	1.019	0.463
Smoking (yes/no)		1.265	0.719	2.224	0.415
Occupation (yes/no)		1.429	0.768	2.661	0.260
Exercise habit (yes/no)		1.074	0.641	1.800	0.786
BMI*	Normal	Ref.	-		-
	Thin	0.709	0.249	2.018	0.519
	Overweight	0.533	0.265	1.070	0.077
	Obesity	0.761	0.259	2.234	0.619
Comorbidities	None	Ref.	-		-
	1	2.453	1.428	4.212	0.001
	≥ 2	2.521	0.996	6.380	0.051

*Normal: 18.5 ≤ BMI < 25.0 Thin: BMI < 18.5 Overweight: 25.0 ≤ BMI < 30.0 Obese: 30.0 ≤ BMI

Table 9-2. Risk factors for chronic LBP

		Odds Ratio	95%CI		P Value
Sex	Men	Ref.	-		-
	Women	1.187	0.883	1.595	0.255
Age group	20–29 years	Ref.	-		-
	30–39 years	1.568	0.702	3.502	0.273
	40–49 years	2.733	1.312	5.695	0.007
	50–59 years	1.982	0.943	4.163	0.071
	60–69 years	3.382	1.609	7.109	0.001
	70–79 years	3.240	1.499	7.003	0.003
	80–89 years	4.910	2.151	11.208	<0.001
PSS			1.005	1.051	0.017
SF-36 Mental health			0.945	0.978	<0.001
Smoking (yes/no)			1.242	2.475	0.001
Occupation (yes/no)			0.951	1.940	0.093
Exercise habit (yes/no)			0.738	1.348	0.986
BMI*	Normal	Ref.	-		-
	Thin	0.850	0.476	1.517	0.582
	Overweight	1.236	0.878	1.740	0.224
	Obesity	1.306	0.703	2.425	0.399
Comorbidities	None	Ref.	-		-
	1	1.166	0.843	1.613	0.353
	≥ 2	2.472	1.592	3.836	<0.001

*Normal: 18.5 ≤ BMI < 25.0 Thin: BMI < 18.5 Overweight: 25.0 ≤ BMI < 30.0 Obese: 30.0 ≤ BMI

10. Executive summary

10-1. Prevalence of LBP

1) The prevalence of LBP in the survey population was 15.3% among men, 14.7% among women, and 15.0% among the general population.
2) Overall, 43.9% of men and 43.6% of women experienced LBP requiring treatment. By age group, a high prevalence was observed among men in the 50–59 and 60–69 age groups and a high prevalence among women in the 50–59 age group.

10-2. Impact of LBP on daily life and society

1) When comparing the "with LBP" to the "without LBP" group, the quality of life of the "with LBP" group was lower in all SF-36 domains. Similar characteristics were observed in most domains based on sex and age.
2) Regarding treatment-seeking behavior and absence from work or household activities among respondents with LBP in the survey, medical visits accounted for 43.3% (mean: 1.8 times/month), hospitalization for 1.0%, and absence from work or household activities for 14.9% (mean: 0.9 days/month).

10-3. Impact of LBP on work productivity

1) In the overall working population, the "with LBP" group had a 12.9% higher percent impairment while working compared to the "without LBP" group and a 2% higher percent work time missed.
2) By sex and age group, the percent impairment while working was higher in the "with LBP" group for most of the subgroups, whereas the percent work time missed was higher only for men 40–49 years and women 20–29 years.

10-4. Association between LBP by onset mode and risk factors for LBP

1) The odds of prevalent acute/subacute LBP were higher in those with comorbidities and tended to be higher in the 40–49 age group than in the 20–29 age group.
2) The odds of prevalent chronic LBP were higher with increasing age, highest among the 80-89 age group when compared to 20–29 years, with higher smoking frequency, with higher perceived stress, lower depressive levels, and higher with multiple comorbidities.

11. References

1) Chen S, Chen M, Wu X, Lin S, Tao C, Cao H, et al. Global, regional and national burden of low back pain 1990-2019: A systematic analysis of the Global Burden of Disease study 2019. J Orthop Translat. 2022;32: 49–58. doi:10.1016/j.jot.2021.07.005

2) GBD 2021 Diseases and Injuries Collaborators. Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. Lancet. 2024. doi:10.1016/S0140-6736(24)00757-8

3) List of datasets/Comprehensive Survey of Living Conditions, 2022 / Prevalence of symptoms (per thousand population), by age (per five-year age group), symptom(s) (multiple responses), and sex. The Portal Site of Official Statistics of Japan. the Statistics Bureau, Ministry of Internal Affairs and Communications; 2023. (In Japanese) URL: https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&data=1&metadata=1&cycle=7&toukei=00450061&tstat=000001206248&tclass1=000001206254&tclass2val=0&stat_infid=000040071870

4) List of datasets / Comprehensive Survey of Living Conditions, 1998 / Prevalence of symptoms (per thousand population), by age (per ten-year age group), symptom(s) (multiple responses), and sex. The Portal Site of Official Statistics of Japan. the Statistics Bureau, Ministry of Internal Affairs and Communications; 2009. (In Japanese) URL: https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&data=1&metadata=1&cycle=7&toukei=00450061&tstat=000001031016&tclass1=000001031080&tclass2=000001023691&tclass3val=0&stat_infid=000002352791

5) Fukuhara S, Suzukamo Y, Morita S, Takahashi N, Konno S, Kikuchi S. Report on the national survey on low back pain 2003. The Japanese Orthopaedic Association. (In Japanese) URL: https://www.joa.or.jp/media/comment/pdf/lumbago_report_030731.pdf

6) Fukuhara S, Bito S, Green J, Hsiao A, Kurokawa K. Translation, adaptation, and validation of the SF-36 Health Survey for use in Japan. J Clin Epidemiol. 1998;51: 1037–1044. doi:10.1016/s0895-4356(98)00095-x

7) Fukuhara S, Suzukamo Y. Manual of SF-36v2 Japanese version (January 2015 Edition). 3rd

ed. iHope International; 2015. (In Japanese)
8) Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24: 385–396. URL: https://www.ncbi.nlm.nih.gov/pubmed/6668417
9) Sumi K. Reliability and validity of the Japanese version of the Perceived Stress Scale. Jpn J Health Psychol. 2006;19: 44‐53. (In Japanese) doi:10.11560/jahp.19.2_44
10) Reilly MC, Zbrozek AS, Dukes EM. The validity and reproducibility of a work productivity and activity impairment instrument. Pharmacoeconomics. 1993;4: 353–365. doi:10.2165/00019053-199304050-00006
11) Margaret Reilly Associates, Inc. WPAI:GH V2.0. REILLY ASSOCIATES. URL: http://www.reillyassociates.net/WPAI_GH.html

12. Disclosures

This study was supported by a scholarship donation from Eli Lilly Japan K.K., and a research grant from the Japanese Society of Lumbar Spine Disorders.

The following authors declare conflicts of interest:

Noriaki Kurita received payments for speaking and educational events from Taisho Pharmaceutical Co. Ltd., Eisai Co. Ltd., and Takeda Pharmaceutical Co., Ltd.

Takuya Nikaido received payments for speaking and educational events from Daiichi Sankyo Co., Ltd., Hisamitsu Pharmaceutical Co., Inc., Shionogi & Co., Ltd., and Nippon Zoki Pharmaceutical Co., Ltd.

Yasuchika Aoki received payments for speaking and educational events from FUJIFILM Healthcare Co., Daiichi Sankyo Co., Ltd., Hisamitsu Pharmaceutical Co. Inc. and Shionogi Pharmaceutical Co., Ltd.

Hiromitsu Toyoda received payments for speaking and educational events from Daiichi Sankyo Co., Ltd.

Kazuyoshi Nakanishi received payment for speaking and educational events from Daiichi Sankyo Co., Ltd.

Yu Yamamoto worked at a donation-endowed laboratory in the Division of Geriatric Musculoskeletal Health from 2020 to 2023. Source of funding are listed below: Medtronic Sofamor Danek Inc., Japan Medical Dynamic Marketing Inc., and Meitoku Medical Institution Jyuzen Memorial Hospital

Seiji Ohtori received payment for speaking and educational events from Daiichi Sankyo Co., Ltd.

Other authors have no conflicts of interest to declare.

Addendum

In the initial version of this report, a portion of the description regarding the stratified two-stage random sampling design in Section 3 (Methodology of the Survey) was inaccurately stated. In the present revised version, this description has been corrected to reflect the sampling design actually implemented. This correction does not affect the results or conclusions of the study.